Primary Care Internal Medicine

Female Urinary Incontinence

May Wakamatsu, MD
MGH Vincent Obstetrics & Gynecology Dept
Division of Female Pelvic Medicine & Reconstructive Surgery
2015
Female Urinary Incontinence

Objectives:

1. The learner will be able to dx and evaluate urinary incontinence using history, exam and voiding diary
2. Treat the incontinent patient with non-surgical measures
3. Become familiar with the newer and surgical treatments of urinary incontinence
I have no relationships with any industry pertaining to this presentation
Another problem caused by deforestation
URINARY INCONTINENCE: PREVALENCE AND COST

12.4 billion/year

» 17-55% of community dwelling
» 8.6 billion/year

» 50% of institutionalized elderly
» 3.8 billion/year

Wilson L et al, Obstet Gynecol 2001
STRESS URINARY INCONTINENCE

57 y/o parous, healthy woman

- Urinary incontinence with cough, sneeze or lifting heavy objects
- Leaks if she goes jogging or plays tennis
OVERACTIVE BLADDER (OAB)
(urge incontinence; detrusor overactivity)

78 y.o. woman

- Leaks on the way to the toilet if “she waits too long”
- Voids frequently during the day to avoid urinary incontinence and is beginning to get up more frequently at night
- No or minimal leaking with cough, sneeze, lifting
MECHANISM OF STRESS INCONTINENCE

Pressure Transmission

Hammock Theory

Urethral Intrinsic Sphincter Deficiency

OVER ACTIVE BLADDER (OAB) INCONTINENCE

Pathophysiology: Loss of cortical inhibition of sacral reflexes resulting in uninhibited bladder contractions and peripheral nerve changes
OVER ACTIVE BLADDER: 
Associated Conditions

- Idiopathic detrusor overactivity
  - Congenital
  - Aging

- Neurogenic detrusor overactivity
  - Multiple sclerosis
  - Cerebralvascular disease
  - Parkinson’s disease
  - Dementia
  - Neoplasia
  - Spinal cord injury
  - Other neurological diseases
OVER ACTIVE BLADDER:
Associated Conditions

- Bladder Outlet obstruction surgery and pelvic surgery
  - Anti-incontinence surgery
  - Advanced pelvic organ prolapse
- Psychosomatic disease
- Urine in proximal urethra
- Inflammation (UTI)
- Orgasm
- Detrusor overactivity with impaired contractility (usually in elderly)
- Mixed incontinence
PRIMARY EVALUATION: History

STRESS INCONTINENCE:
- Do you leak when you cough, sneeze, lift?

URGE INCONTINENCE:
- Do you leak on the way to the toilet?
- Void frequently? (more often than Q 2 hrs)
- Get up more than twice at night to void?
- Do you wet the bed at night in your sleep?
PRIMARY EVALUATION: History

- Duration of incontinence?
- Progressive?  Stable?
- How severe?  How many and what type of pads?
- How does it affect your life?
PRIMARY EVALUATION: History

- How much fluid do you drink?
- How much caffeine?
- How much alcohol?
- Medication
- Medical history (Parkinson’s, MS, stroke, spinal cord injury, Alzheimer’s)
URINARY INCONTINENCE: APPROPRIATE PROTECTION

- Menstrual pads versus Incontinence pads

SKIN PROTECTION:

- Ointments for baby’s bottoms: inexpensive and easily available ("Balmex")
REVERSIBLE CAUSES OF INCONTINENCE: DIAPPERS

D  Delirium or acute confusion
I  Infection (UTI)
A  Atrophic vaginitis or urethritis
P  Pharmaceutical agents (diuretics, alpha one blocker)
P  Psychological disorder (depression, behavioral disturbance)
E  Excess urine output (water, caffeine, CHF, etc)
R  Restricted mobility
S  Stool impaction

TREATMENT:
STRESS URINARY INCONTINENCE

57 y/o parous, healthy woman

- Urinary incontinence with cough and sneeze
- Leaks if she goes jogging or plays tennis
Pelvic Floor Exercises ("Kegels")

- Perform pelvic floor exercises correctly
- Do enough to strengthen the pelvic floor muscles
- Tighten/contract the pelvic floor muscles at the time of increased intra-abdominal pressure (stress incontinence) or urge sensation
PELVIC FLOOR EXERCISES

- 20-40/day, morning, afternoon, evening and night
- Hold for 5-10 secs
- Use it! Kegel at the time of cough, sneeze or urge to void
www.womenshealthapta.org/
Pelvic floor muscle training versus no treatment, or inactive control treatments, for urinary incontinence in women. Cochrane Database Review, 2010:

- 12 trials; 672 women (435 PFMT, 401 controls)
- Pelvic floor muscle training vs sham, placebo, inactive

**Conclusion:** The review provides support for the widespread recommendation that PFMT be included in first-line conservative management programs for women with stress, urge, or mixed urinary incontinence.
Refer patient to **pelvic floor physical therapy**
For: stress, OAB incontinence and frequency

Pelvic floor physical therapists will:
- Teach patient how to perform pelvic floor exercises and strengthen other appropriate muscles
- Guide patient through bladder training
- May utilize vaginal electrical and/or pressure biofeedback or surface electromyography feedback
- May utilize vaginal weighted cones
- Reinforce caffeine reduction and appropriate fluid intake
PESSARIES
or TAMPON FOR INCONTINENCE

- Incontinence ring
- Incontinence dish
- Incontinence dish with support
- “Ob” tampon (place in vagina)
VAGINAL WEIGHTED CONES

- A form of biofeedback to strengthen pelvic floor muscles

- Patient must not have a lot of vaginal prolapse
PRESSURE OR EMG BIOFEEDBACK AND/OR
VAGINAL ELECTRICAL STIMULATION

15 minutes BID, then wean to maintain bladder control
Biofeedback therapy for urinary incontinence
SUMMARY: OUTPATIENT TREATMENT FOR STRESS INCONTINENCE

- Pelvic floor exercises/refer to pelvic floor physical therapy
- Normalize fluid intake, 48-64 oz/day
- Minimize caffeine intake
- Follow-up every 2-3 months x 3-4 visits
- If no significant improvement, consider other treatment modalities/urodynamic testing/refer
“Do you know what I fear most about old age?”

“No what?”

“Incontinence!”
TREATMENT: OVERACTIVE BLADDER (OAB)

78 y.o. woman

- Leaks on the way to the toilet if “she waits too long”
- Voids frequently during the day to avoid urinary incontinence and is beginning to get up more frequently at night
- No or minimal leaking with cough, sneeze, lifting
WATCH WHAT I CAN MAKE PAVLOV DO. AS SOON AS I DROOL, HE'LL SMILE AND WRITE IN HIS LITTLE BOOK.
TREATMENT OF OVER ACTIVE BLADDER INCONTINENCE

- Bladder training (behavioral)
- Discontinue or modify caffeine/diuretics
- Normalize fluid intake (48-64 oz/day)
- Vaginal estrogen therapy
- Pelvic floor exercises
- Patient education
Neuroplasticity

At birth
C nerve fibers
pain, temperature

A delta nerves
Lightly myelinated
Small fibers

Bladder training
Normalize bladder function

A delta nerves become C fibers

Bladder injury
Obstruction, inflammation
Spinal cord disease, etc

maturation

Urogynecology and Pelvic Reconstructive Surgery
### Treatment of Overactive Bladder: Voiding/Leak/Intake Diary

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Amount voided</th>
<th>Amount leaked (1, 2, 3)</th>
<th>Activity with leaking</th>
<th>Urge present at time of leak: yes/no</th>
<th>Fluid Intake</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/25/13</td>
<td>7 am</td>
<td>10 oz</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 am</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9:15 am</td>
<td>4 oz</td>
<td>2</td>
<td>Walking to toilet</td>
<td>yes</td>
<td></td>
<td>10 oz coffee 8 oz OJ</td>
</tr>
<tr>
<td>9:30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10 oz water</td>
</tr>
<tr>
<td>10:30 am</td>
<td>3 oz</td>
<td>1</td>
<td>Walking to toilet</td>
<td>yes</td>
<td></td>
<td>10 oz tea</td>
</tr>
<tr>
<td>12:15 pm</td>
<td>4 oz</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>16 oz coke</td>
</tr>
</tbody>
</table>
BLADDER TRAINING

1. Review Diary with patient
2. Pick shortest voiding interval
3. Void by the clock starting at the shortest interval + 15 minutes during the day
4. Gradually lengthen interval
5. Goal = void every 3-4 hours during the daytime
"I've reached that age where I've given up on Mind Over Matter and am concentrating on Brain over bladder"
# Treatment of Overactive Bladder: Voiding/Leak/Intake Diary

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Amount voided</th>
<th>Amount leaked (1, 2, 3)</th>
<th>Activity with leaking</th>
<th>Urge present at time of leak: yes/no</th>
<th>Fluid Intake</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/25/13</td>
<td>7 am</td>
<td>10 oz</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>8 am</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10 oz coffee</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8 oz OJ</td>
</tr>
<tr>
<td>9:15 am</td>
<td>4 oz</td>
<td>2</td>
<td>Walking to toilet</td>
<td>yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9:30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10 oz water</td>
</tr>
<tr>
<td>10:30 am</td>
<td>3 oz</td>
<td>1</td>
<td>Walking to toilet</td>
<td>yes</td>
<td></td>
<td>10 oz tea</td>
</tr>
<tr>
<td>12:15 pm</td>
<td>4 oz</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>16 oz coke</td>
</tr>
</tbody>
</table>
MEDICATION FOR OVERACTIVE BLADDER INCONTINENCE

- oxybutinin XL  5, 10, 15 mg QD *(crosses blood brain barrier easily)*
- tolterodine LA  2 or 4 mg QD
- tolterodine  1 or 2 mg BID
- oxybutinin patch  3.9 mg/day
- oxybutinin immediate release 5 mg tablets, 2.5-5 mg BID-TID
MORE MEDICATIONS FOR OVERACTIVE BLADDER INCONTINENCE

- trospium 20 mg PO BID
- trospium XR 60 mg QD
- solifenacin 5-10 mg PO QD
- darifenacin 7.5 – 15 mg PO QD (more M3 receptor, bladder, specific)
- fesoterodine 4 – 8 mg PO QD
- oxybutinin gel 1 sachet topically QD
- imipramine 10-30 mg PO QHS
mirabegron for Overactive Bladder

- Beta 3 adrenoeceptor agonist
- Relaxes detrusor muscle
- Increases bladder capacity
Efficacy & tolerability of mirabegron Phase III trial
Safety & Efficacy of mirabegron, 12 mos f/u

Fig. 3. Efficacy variables—adjusted mean change from baseline at each visit:
(A) mean number of incontinence episodes per 24 h (full analysis set [FAS]-I);
(B) mean number of micturitions per 24 h (FAS); (C) mean volume voided per micturition (FAS). ER = extended release.
Botox injections for Overactive Bladder

- Decreases OAB sx
- Increases bladder capacity
- Repeat every 10 months
- Approximately 10% of pts may need to perform intermittent self catheterization for urinary retention temporarily
- Risk of recurrent UTIs
VAGINAL ELECTRICAL STIMULATION

15 minutes BID, then wean to maintain bladder control
VAGINAL ELECTRICAL STIMULATION

- Sand, Am J Ob Gyn ‘95 (DBRCT): sig decrease in mean # of incont. Episodes

- Brubaker, Am J Ob Gyn ’97 (DBRCT): sig decrease in detrusor instability incontinence

- Yamanishi, Urology ’00 (BRCT): sig improved continence, improved bladder capacity
PERIPHERAL NERVE STIMULATION

- Refractory frequency and urge incontinence
- \( n = 45 \)
- 12 weekly treatments
- Day voiding frequency decreased by 23%
- Nocturia decreased by 25%
- Incontinence episodes decreased by 31%
- No adverse side effects

Rosenblatt P et al, AUGS 1999
Treatment for OAB: Posterior Tibial Nerve Stimulation

Randomized trial of percutaneous tibial nerve stimulation versus sham efficacy in the treatment of overactive bladder syndrome

- 55% of the treated improved
- 21% of the sham treated improved

Long-Term durability of Percutaneous Tibial Nerve Stimulation for the Treatment of Overactive Bladder

Patients previously treated with PTNS, continued, monthly PTNS treatments for 12 months (not blinded or sham controlled) at 12 months:

- Mean frequency decreased by 2.8 voids/day
- Urge incontinence episodes decreased by 1.6 episodes/day
- OAB symptom questionnaire significantly improved

Peters KM et al. J Urol 2010
MacDiarmid SA et al. J Urol 2010
SUMMARY: TREATMENT OF Overactive Bladder

Education regarding: fluids/caffeine
Teach pelvic floor exercises
Give patient a Diary to fill out
Refer to PT

Modify fluid/caffeine intake based on Diary
Start bladder training based on Diary
Start medication (+/-); check kegel or refer to PT

Follow-up visit in 8 weeks
Review 2nd Diary
Reinforce bladder training; check kegel
Start medication if not already started
Refer to PT

Continue follow-up visits every 8 weeks for 2-3 visits, if no improvement or refer to PT
-> urodynamic testing or other therapy
Reference:

Young patient with persistent frequency, urge, +/- bladder pain after urinary tract infection with negative follow-up urine cultures:

- Check fluids/caffeine
- Bladder train
- Medication, ie, oxybutinin XL, tolterodine LA, etc. or “Urelle” (methanamine, methylene blue, hyoscyamine, salicylate, sodium phosphate)
Older patient with nocturia:

Have patient do a voiding/intake/leak diary

- If voiding diary shows small volumes with each void:
  - Start Bladder training to increase bladder volume
  - Start an anticholinergic or imipramine 10 mg, titrate up by 10 mg every 1-2 wks

- If voiding diary shows large volumes with each void:
  - Check evening fluid intake
  - Lie down with feet raised during the day to mobilize lower extremity edema
OVERFLOW
URINARY INCONTINENCE

- Bladder scan (ultrasound) or straight cath patient for post void residual
- If greater than 100 ccs may have overflow, but usually only symptomatic when PVR is greater than 150-200 ccs
  - Treatment is difficult: patient can learn how to perform intermittent self catheterization; trial of sacral nerve stimulation or high frequency vaginal electrical stimulation (not FDA approved)
URODYNAMIC TESTING
MINIMALLY INVASIVE SLINGS

- 30-45 minute procedure
- Local/spinal/general anesthesia
- Same day or next day discharge
- Minimal post-op pain
- 3 week recovery; back to work in 3-7 days
- Adjustable intra-op
STRESS INCONTINENCE:
BULKING INJECTION THERAPY

DURASPHERE (graphite)
- FDA approved 9/99
- Difficult to inject
- More permanent effect

COAPTITE (Calcium hydroxyapatite)
- Not permanent
- Office procedure

MACROPLASTIQUE (silicone)
- Not permanent
- Office procedure
SACRAL NEUROMODULATION THERAPY ("INTERSTIM")

- For refractory frequency, urge, OAB incontinence
- For the above plus urinary retention
- Now FDA approved for fecal incontinence
IN SUMMARY:

- Modify fluids/caffeine intake
- Check quality of "kegel"
- Voiding diary
- Bladder training
- Refer to pelvic floor physical therapy